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Parent's attitude and knowledge on HPV vaccination: A descriptive study

Ebeveynlerin HPV aşılaması hakkındaki bilgileri ve tutumları: Tanımlayıcı çalışma

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ABSTRACT

Objective: Human papillomavirus (HPV) infection is the most common sexually transmitted disease and can be prevented by vaccination. The most important factors affecting the vaccination rates may be parents' knowledge levels and opinions on the issue and their total income levels. Moreover, parental hesitancy against vaccination, including even those in the national vaccination programs, has recently gradually increased in Turkey and worldwide. Ultimately, in this study, it was aimed to determine parents' knowledge and opinions on the HPV vaccination and the factors affecting their vaccination decisions.

Methods: This cross-sectional descriptive study was conducted with 552 parents of 9-18-year-old daughters and sons at two research hospitals in 2020 in Turkey. Face-to-face interviews were carried out to collect data on the parental knowledge levels and attitudes regarding HPV vaccination, as well as reasons for refusal.

Results: Of the 552 parents, 438 were mothers and 114 were fathers. More than half of the parents (69%) stated that they had not heard of HPV vaccines. After a short briefing, the parents were separately

ÖZET

Amaç: Human papilloma virüsü (HPV) enfeksiyonu, cinsel yolla bulaşan en yaygın hastalıktır ve aşı ile önlenebilir. HPV enfeksiyonu için aşılama oranlarını etkileyen en önemli faktörlerin, ebeveynlerin konuyla ilgili bilgi düzeyleri ve düşünceleri ile toplam gelir düzeyleri olabileceği düşünülmektedir. Ayrıca, ulusal aşılama programlarında olanlar da dahil olmak üzere, ebeveynlerin aşılamaya karşı tereddütleri, Türkiye'de ve Dünya'da son zamanlarda giderek artmıştır. Sonuç olarak, bu çalışma ebeveynlerin HPV aşısı hakkındaki bilgi ve görüşlerini ve aşılama kararlarını etkileyen faktörleri belirlemeyi amaçlamıştır.

Yöntem: Bu kesitsel tanımlayıcı çalışma, Türkiye'de 2020 yılında iki araştırma hastanesinde 9-18 yaş arası kız ve erkek çocukları olan 552 ebeveyn ile gerçekleştirilmiştir. Ebeveynlerin HPV aşısı ile ilgili bilgi düzeyleri ve tutumları ile aşılanmayı reddetme nedenleri hakkında oluşturulan anket yüz yüze görüşme tekniği ile uygulanmıştır.

Bulgular: Araştırmaya katılan 552 ebeveynden 438'i anne ve 114'ü babadır. Ebeveynlerin yarısından fazlası (%69) HPV aşıları ile ilgili daha önce herhangi bir bilgiye sahip olmadıklarını belirtmiştir. Kısa bir bilgilendirmenin

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asked about their thoughts on having their daughters and sons vaccinated with HPV. The majority of the parents with daughters (76.7%; among 532) and 74.6% of 508 parents with sons were positive for vaccination. After informed of the cost of vaccines and the required number of doses, 11.2% of the parents (n=62) stated that they would not have their children vaccinated even if the vaccine was provided by the state for free. The main reason for such an approach may be since they did not have enough information about vaccines [59.6% (n=37)].

Conclusion: Most of the parents did not have enough information about HPV vaccines. The parental vaccine acceptance rates were significantly affected by the paid vaccination. Healthcare professionals have a great responsibility for enlightening families on raising vaccination awareness and increasing vaccine acceptance rates among parents.

Key Words: Human papillomavirus, HPV vaccines, parental knowledge

ardından, ebeveynlere ayrı ayrı kızlarına ve oğullarına HPV aşısı yaptırma konusundaki düşünceleri sorulmuştur. Kız çocuğu olan ebeveynlerin çoğunluğu (%76,7; 532) ve erkek çocuğu olan 508 ebeveynin %74,6'sı aşılama için pozitif tutum sergilemiştir. Aşıların maliyeti ve gerekli doz miktarı konusunda bilgilendirildikten sonra, ebeveynlerin %11,2'si (n=62) aşı devlet tarafından ücretsiz sağlansa bile çocuklarına aşı yaptırmayacağını belirtmiştir. Böyle bir yaklaşımın ana nedeni olarak ebeveynlerin aşılar hakkında yeterli bilgiye sahip olmamaları gösterilebilir [%59,6 (n=37)].

Sonuç: Araştırmaya katılan ebeveynlerin çoğunun HPV aşıları hakkında yeterli bilgiye sahip olmadığı tespit edilmiştir. Ayrıca, ücretli aşılamanın, ebeveynlerin aşı kabul oranlarını önemli ölçüde etkilediği sonucuna varılmıştır. Sağlık çalışanlarının, aileleri aşılama konusunda bilinçlendirme ve ebeveynler arasında aşı kabul oranlarını artırma konusunda büyük sorumlulukları olduğu aşikardır.

Anahtar Kelimeler: Human papilloma virüsü, HPV aşıları, ebeveyn bilgisi

INTRODUCTION

Human papillomavirus (HPV) infection is the most common sexually transmitted disease. Its role in the etiology of cervical, anal, penile, and oropharynx cancers, as well as genital warts, was well-defined (1). The International Agency for Research on Cancer classifies HPV genotypes in connection with the oncogenic potential. HPV 16, 18, 31, 33, 34, 35, 39, 45, 51, 52, 56, 58, 59, 66, 68, and 70 are considered as high risk genotypes (2,3). HPV 16 and 18 are the most common genotypes in women worldwide and associated with most of the cases in invasive cervical and anal cancers (4-6). HPV 6 and 11 are responsible for 90% of anogenital warts, which may reduce the life quality (7). HPV-related diseases can be prevented successfully by prophylactic vaccination. Vaccines are more effective if administered before sexual intercourse (8). Three types of HPV vaccine are currently available. These are Cervarix® (bivalent vaccine against HPV 16 and 18), Gardasil® (quadrivalent vaccine against HPV 16, 18, 6, and 11), and Gardasil®-9 (NanoValent vaccine against HPV 16, 18, 31, 33, 45, 52, 58, 6, and 11). They are all effective against strains of the virus leading to precancerous lesions (1). Those HPV vaccines are recommended to be administered in two doses to both girls and boys aged 9-14 years and three doses

after the age of 15 (9).

In the United States (US), routine HPV vaccination started to be recommended for females and males between the ages of 9-26 in 2006 and 2011, respectively. However, HPV vaccination rates remained suboptimal due to a lack of adequate knowledge and awareness on HPV (10). Australia, New Zealand, Brazil, Canada, Israel, and most European countries have already included HPV vaccine into their national vaccine programs for boys and girls (11). Bivalent and quadrivalent HPV vaccines are also available in Turkey, but they are not listed in the National Vaccine Program of the Ministry of Health.

The most important factors affecting the vaccination rates may be parents' knowledge levels and opinions on the issue and their total income levels. Moreover, parental hesitancy against vaccination, including even those in the national vaccination programs, has recently increased in Turkey and worldwide (12,13). Ultimately, in this study, it was aimed to determine parents' knowledge levels and opinions on the HPV vaccination.

MATERIAL and METHOD

This cross-sectional descriptive study was carried out with 552 parents with 9-18-years-old daughters and sons at Dr. Sami Ulus Maternity and Children's Health and Diseases Training and Research Hospital and the School of Medicine, Kırıkkale University between January-February, 2020. Ethics committee approval was obtained from Kırıkkale University Non-invasive Research Ethics Committee (Date: 08.01.2020, Number: 2019.12.20), and signed informed consent froms were sougt from all the parents (either from the father or the mother).

Face-to-face interviews were performed to collect data on the parental knowledge levels and attitudes regarding the HPV vaccination, as well as their reasons for refusal. The parents were recruited to the interviews after examining their children, and each interview lasted for approximately 10 minutes. The participants were read out the questions, from an anonymous questionnaire adapted from previous studies, and their responses were recorded on the questionnaire form. The survey instrument is given in the Appendix. Open-ended, close-ended, and multiple-choice questions were asked to the participants about their socio-demographic information and knowledge and opinions on HPV vaccines. The parents were not assisted when responding to the questions. The parents having healthcare-related jobs were excluded from the study since they could have been informed of HPV vaccines.

Close-ended questions were asked to the parents to uncover their knowledge levels on HPV vaccines and their awareness of the fact that cervical cancer is a vaccine-preventable disease. Multiple-choice questions were used to collect information about the parents' educational attainment, monthly income levels, and vaccination approaches after they were informed about HPV. After informing the parents briefly about HPV, their opinions were asked about having their children vaccinated. The parents were informed about two available types of HPV vaccine in our country, their costs, and the requirement that three doses should be administered within 6 months. Then, those stating that they would not allow their children to be vaccinated even if the vaccine was provided by the state for free were inquired with an open-ended question about the reasons for disallowance. The utilized questionnaire is available in the Appendix.

SPSS version 15.0 (Statistical Package for the Social Science, Inc.; Chicago, IL, USA) was used for all statistical analyses. Continuous variables were shown as means and standard deviations, and categorical variables were displayed as numbers and percentages.

RESULTS

Of the 552 parents; 438 were mothers and 114 were fathers. The mean age of the parents was 39.1±5.9 years. In terms of educational attainment,

Appendix: Questionnaire Form

1. How old are you?

2. What is your educational background?

a) Illiterate b) Primary school c) Middle school d) High school e) University

3. What is your monthly income level? (") *

a)<"2000 b) "2.000-5.000 c)>"5.000

4. How many children do you have alive?

5. ***Can you write down the age and gender of your child(ren)?***

6. What is your relationship with your child(ren)?

a) Mother b) Father

7. Have you heard of HPV vaccines before?

a) Yes b) No

8. Do you know that cervical cancer is a vaccine-preventable disease?

a) Yes b) No

9. Cervical cancer is one of the most common cancer types in women. Cervical cancer can be prevented in the future with HPV vaccines administered to children starting from the age of 9. In line with this information, would you consider having your daughter(s) vaccinated to prevent her future cervical cancer?

a) Yes b) No

10. Men can carry the HPV germ in their genitals without any symptoms and infect their partners. More rarely, it can cause cancer in the genitals of men. These risks can be greatly reduced with HPV vaccines that can be administered to boys from the age of 9 on their arms. Based on this information, would you consider having your son(s) vaccinated?

a) Yes b) No

11. There are two types of HPV vaccine. For the HPV vaccine to prevent cervical cancer, it should be administered in 2 doses to children at 9-14 years of age and 3 doses after 15 years of age. The price of each vaccine varies between 300-450 TL and is not covered by the state. In this case, would you consider having your daughter(s) vaccinated?

a) I would consider getting my daughter(s) vaccinated if the vaccine was provided by the state for free.

b) I accept it under any circumstances.

c) Even if the vaccine is provided by the state for free, I will not accept it.

12. If your answer to the above question is "c" (even if it is provided by the state free of charge, I will not accept it), can you write down your reason?

*1 USD ="5.95 (January, 2020)

35.4% of mothers and 16.7% of fathers had poor education (illiterate or primary school graduates). The frequencies of mothers having graduated from middle school, high school, and university were 18.3, 31.5%, and 14.8%, respectively. For fathers, they were 19.3%, 39.5%, and 24.6%, respectively (Table 1).

Monthly income levels were divided into three groups as "below "2000" (53.1%), "between "2000-5000" (36.8%), and "over "5000" (10.1%), respectively. There were 321 (73%) housewife mothers, while others were employed. Twenty-six fathers (22.8%) were unemployed.

Table 1. The demographic characteristics of the parents and their opinions on HPV vaccines

Parameters	Mothers (n=438)	Fathers (n=114)
Mean Age	38.7±5	40.8±5
Educational Attainment		
Illiterate	9 (2.1%)	-
Primary School	146 (33.3%)	19 (16.7%)
Middle School	80 (%18.3)	22 (19.3%)
High School	138 (31.5%)	45 (39.5%)
University	65 (14.8%)	28 (24.6%)
Monthly Income		
<"2000	257 (58.7%)	36 (31.6%)
"2000-5000	139 (31.7%)	64 (56.1%)
>"5000	42 (9.6%)	14 (12.3%)
Ever heard of HPV vaccines?		
Yes	157 (35.8%)	14 (12.3%)
No	281 (64.2%)	100 (87.7%)
Question 8*		
Yes	160 (36.5%)	14 (12.3%)
No	278 (63.5%)	100 (87.7%)
Question 9*		
Yes	316 (74.8%)	92 (83.6%)
No	106 (25.2%)	18 (16.4%)
Parents without a daughter	16	4
Question 10*		
Yes	291 (73.3%)	88 (79.3%)
No	101 (25.4%)	21 (18.9%)
Indecisive	5 (1.3%)	2 (1.8%)
Parents without a son	41	3
Question 11*		
a) If the vaccine was provided by the state free of charge, I would have it done.	350 (79.9%)	99 (86.8%)
b) I would have it done under any circumstances	36 (8.2%)	5 (4.4%)
c) Even if the vaccine was provided by the state free of charge, I would NOT have it done.	52 (11.9%)	10 (8.8%)
Question 12*	**(n=52)**	**(n=10)**
I don't know enough about vaccines	30	7
I don't trust vaccines	13	3
I don't think vaccines are necessary	4	0
I fear their side effects	3	0
I don't think vaccines are useful	1	0
My child would not want to be vaccinated when grown up	1	0

*Appendix questions

It was found that the majority of the participants (69%) had never heard of HPV vaccines before. About the same number of the participants (68.5%) did not know that cervical cancer is a vaccine-preventable disease. After a short briefing, the parents were asked separately about their thoughts on having their children vaccinated. It was found out that 76.7% of 532 parents with daughters and 74.6% of 508 parents with sons were positive for vaccination for their children. The parents were also informed about the costs and required number of doses of the vaccines. Accordingly, 88.7% of the parents (n=490) accepted having their children to be vaccinated. Nearly four-fifths of the parents (81.3%; n=449) were positive for vaccination if the vaccine was provided by the state free of charge. The number of those accepting the vaccination for their children under all circumstances was 41 (7.4%). Finally, 11.2% (n=62) were negative even if the state provided the vaccine for free.

Then, it was inquired what kind of reasons were proposed by those against the vaccination in any case. An open-ended question about the reason was asked to participants who reply "I will not accept even if the vaccine is provided free of charge by the state".The major (59.6%; n=37) reason was that they did not have enough information about the vaccines (Table 1). This was followed by lack of confidence in the vaccines (25.8%; n=16), feeling vaccines being unnecessary (6.4%; n=4), and concerns about the possible side effects (4.8%; n=3). Besides, a parent (1.6%) had a thinking that vaccines are not beneficial, another (%1.6) thought that children would not want to be vaccinated when they grew up. The parental responses are shown in Table 1, and Table 2 displays the characteristics of parents who did not intend to have their children vaccinated.

Table 2. The characteristics of the parents who did not consider vaccination to their children even if the vaccine was provided by the state free of charge

Total Numbers and Percentages	**n=62 (100%)**
Mean Age	39.3±6.1
Educational Attainment	
Illiterate	1 (1.6%)
Primary School	15 (24.2%)
Middle School	17 (27.4%)
High School	19 (30.6%)
University	10 (16.1%)
Monthly Income	
<"2000	34 (54.8%)
"2000-5000	24 (38.7%)
>"5000	4 (6.5%)
Ever heard of HPV vaccines?	
Yes	11 (17.7%)
No	51 (82.3%)
Do you know that cervical cancer is a vaccine-preventable disease?	
Yes	15 (24.2%)
No	47 (75.8%)

DISCUSSION

Cervical cancer can be diagnosed early with regular cervical cancer screening and is a disease that can be prevented by vaccination. HPV infections are responsible for nearly all cervical and anal cancers, approximately 70% of the vulva, vaginal, and oropharyngeal cancers and 60% of the penile cancers (14). Nevertheless, treatment of the disease is more difficult and expensive and requires a longer time compared to vaccination. Parental attitudes and decisions play an important role in the HPV vaccination of adolescents, especially in countries that do not include HPV vaccines in their national vaccination programs, like Turkey. There are many factors affecting the vaccination decision, including parental knowledge level on HPV vaccines, gender differences, socio-demographic variables, cultural characteristics, religious beliefs, and income levels.

In the present study, about two-third of the parents declared that they had never heard HPV vaccines and did not know that cervical cancer is a vaccine-preventable disease. The poor knowledge and awareness among parents are not surprising since the vaccines have not yet been included in the national vaccination program. Furthermore, since people are not informed regularly about HPV vaccines, cervical cancer occurs in women at advanced ages. Poor knowledge of parents on HPV-related diseases and HPV vaccines are widespread worldwide (1,8,15,16). In Thailand, where HPV vaccines are not included in the national vaccine program, 54% of the parents were determined to have no knowledge about these vaccines. In the same study, Grandahl et al. found that there was a relationship between the parents' knowledge and religious beliefs and their vaccine acceptance (8). In a study conducted with 746 parents in Indonesia, it was determined that 66.0%, 16.6%, and 15.8% heard about cervical cancer, HPV, and HPV vaccination, respectively. It was reported that the HPV vaccine acceptance rate was very high (96.1%) after receiving information about vaccination (16). Different results were reported in similar studies in many countries. The acceptance rate of HPV vaccines was found to be 52%, 77%, and 88% in China, Mexico, and the Netherlands, respectively (17-19). After brief information via questionnaire in our study, 88.7% of the parents thought to have their children vaccinated. Informing parents about HPV vaccines and physican recommendations of these vaccines can be among the main factors affecting vaccination rates.

The USA is among the countries where HPV vaccines are implemented free of charge; it was reported that 28% of parents refused HPV vaccines and 8% delayed them. The most common reasons for refusal or delay were that the parents thought their children were not sexually active, concerned about persistent health problems, or their children did not need such vaccines (20). Mendes Lobao et al. reported that parents who refused HPV vaccines indicated that they did not find HPV vaccines safe since they could cause severe reactions and adverse event, that girls aged 9-13 years were too young for vaccination, and that HPV vaccines could cause unexpected sexual activity in girls (21). In our study, it was disocvered that 11.2% of the parents refused to have their children vaccinated even after being informed via the questionnaire. They commonly showed having no relevant knowledge and mistrust as reasons for vaccination refusal, which suggests that parents should be informed more about this issue to increase HPV vaccination rates.

Although HPV vaccines are recommended for girls and boys, parents can think the opposite about the HPV vaccination of their daughters and sons. In Brazil, parents agreed to have their daughters (92%) and sons (86%) vaccinated. The most apparent reason suggested by those who accepted vaccination to their daughters, but sons, was that they knew that the vaccine was not recommended to boys (21). Parental acceptance of HPV vaccination for their sons and daughters was reported price-sensitive in China; the study inquired the parent's vaccination decisions by vaccine fees. As a result, parental acceptance of vaccines for their sons vs. daughters

was 14.9% vs. 27.4% if the vaccine was available at market price, while it was about 30% vs. 50% if the price was halved. About half of the parents (50% vs. 60%) accepted vaccination if free HPV vaccines were available. However, vaccine acceptance rates of parents were lower for their sons under all three price estimations (22). In our study, 76.6% of the parents with a daughter and 74.6% of those with a son agreed to have their children vaccinated. However, 1.26% (n=7) of the parents remained undecided about the vaccination of their sons. It may be because more than half of the parents had heard of HPV vaccines for the first time at the time of the study and the questionnaire provided the parents with limited information. The fact that parental acceptance of vaccination for their sons was relatively low compared to daughters suggests that they have different opinions on sexually-transmitted HPV. HPV vaccines can be purchased from pharmacies in Turkey. More than half of the parents in our study had a very low-income level [below monthly minimum wage; ″2020 for 2019 December (23)]; 73% of mothers were housewives and 22.8% of fathers were unemployed. After giving information about the cost of vaccines and the required number of doses, 88.7% (n=490) of parents accepted vaccination to their children. The majority of them (81.3%) stated that they could only get vaccines if they were free. This result may be related to the fact that our hospital serves people with a low socio-economic level as considering the economical and educational status of partcipants. Because 53.1% of the parents who answered the questionnaire had a monthly income below ″2000 and 35.4% of mothers and 16.7% of fathers had poor education (illiterate or primary school graduates).

Parental acceptance of vaccination for girls was reported as 88% in Canada, and there was no significant relationship between the educational attainment of the parents who accepted and refused vaccination and vaccine acceptance (24). In our study, among parents refusing HPV vaccination for their children even if the vaccine was free of charge, 16.1% were university graduates, while 30.6% had a high school degree. This result suggests that knowledge level on HPV vaccines outweighs educational attainment in terms of vaccine acceptance.

In recent years, parental vaccine hesitancy and refusal, including routine vaccines, has been increasing worldwide. As a result of this, many countries have reported an increase in vaccine-preventable diseases (12, 13). In the present study, it was concluded that vaccine acceptance rates would increase if HPV vaccines were provided free of charge, because the average income level of the parents was low. However, 11.2% (62/552) of the parents reported that they would not have their children vaccinated even if the vaccine was provided by the state free of charge. It may be because more than half of the parents refusing vaccination (59.6%) did not have enough information about vaccines.

Most of the parents participating in this study consisted of mothers, and also due to the onset of the Covid-19 pandemic in our country (March 2020), the duration of the study could not be kept longer, so more participants could not be reached. Limited information was available to parents who had heard of HPV and HPV vaccines for the first time during the study. The data assesement was limited with descriptive analysis and we could not used a validated scale.

The present study suggested that most participating parents did not have relevant information about HPV vaccines, but they tended to accept HPV vaccination to their children after brief information. The paid administering of vaccines inevitably and adversely affected parental vaccine acceptance. However, some parents did not consider vaccination to their children even if the vaccine was provided free of charge by the state. Healthcare professionals have a great responsibility for enlightening families on raising vaccination awareness and increasing vaccine acceptance rates among parents.

ETHICS COMITTEE APPROVAL

* This study was approved by the Kırıkkale University Non-invasive Research Ethics Committee (Date:08.01.2020 and No:2019.12.20).

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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